Fig. 1

Input Video Stream 104

decoder 102

decoded Video 106

encoder 114

encoded Video Stream 116

decoding Process information 108

transcoder control unit 110

target bit rate ratio (r) 118

Q_o

100

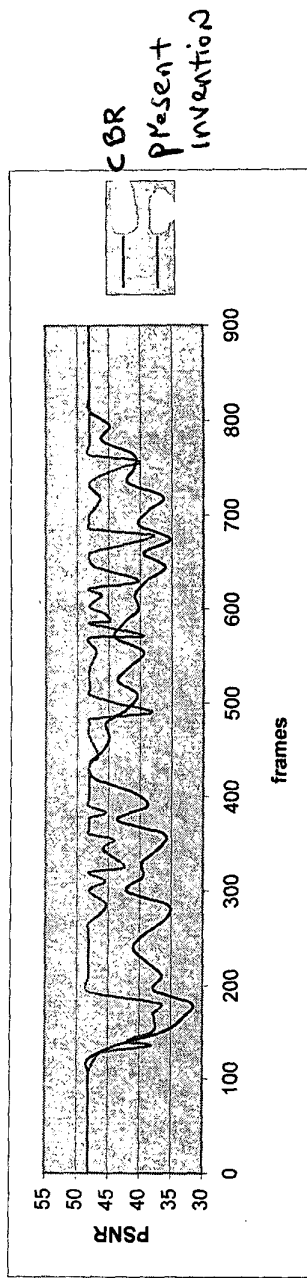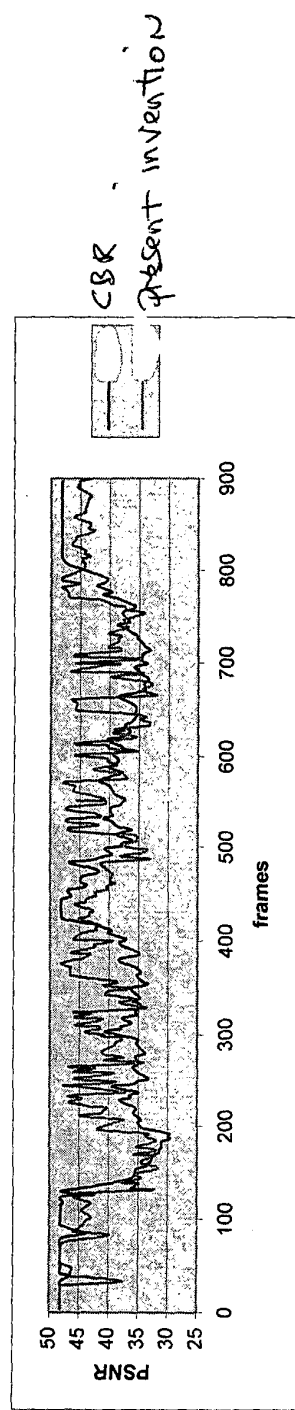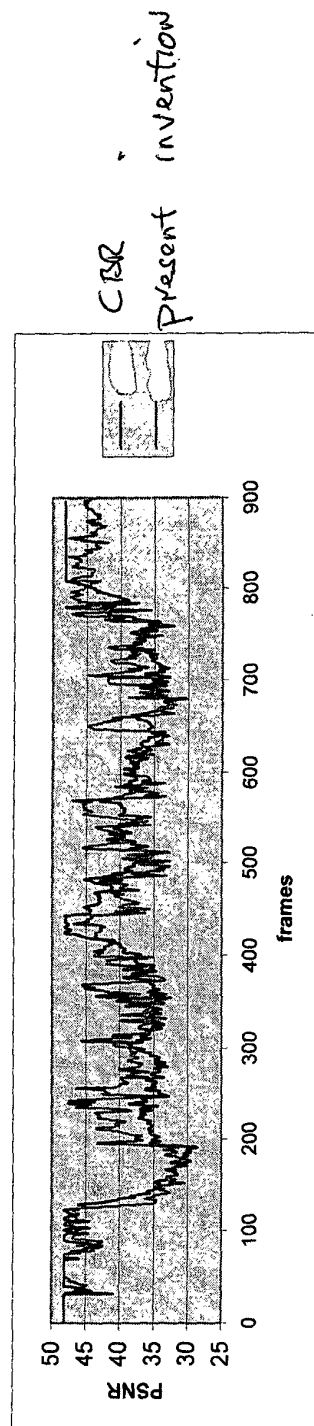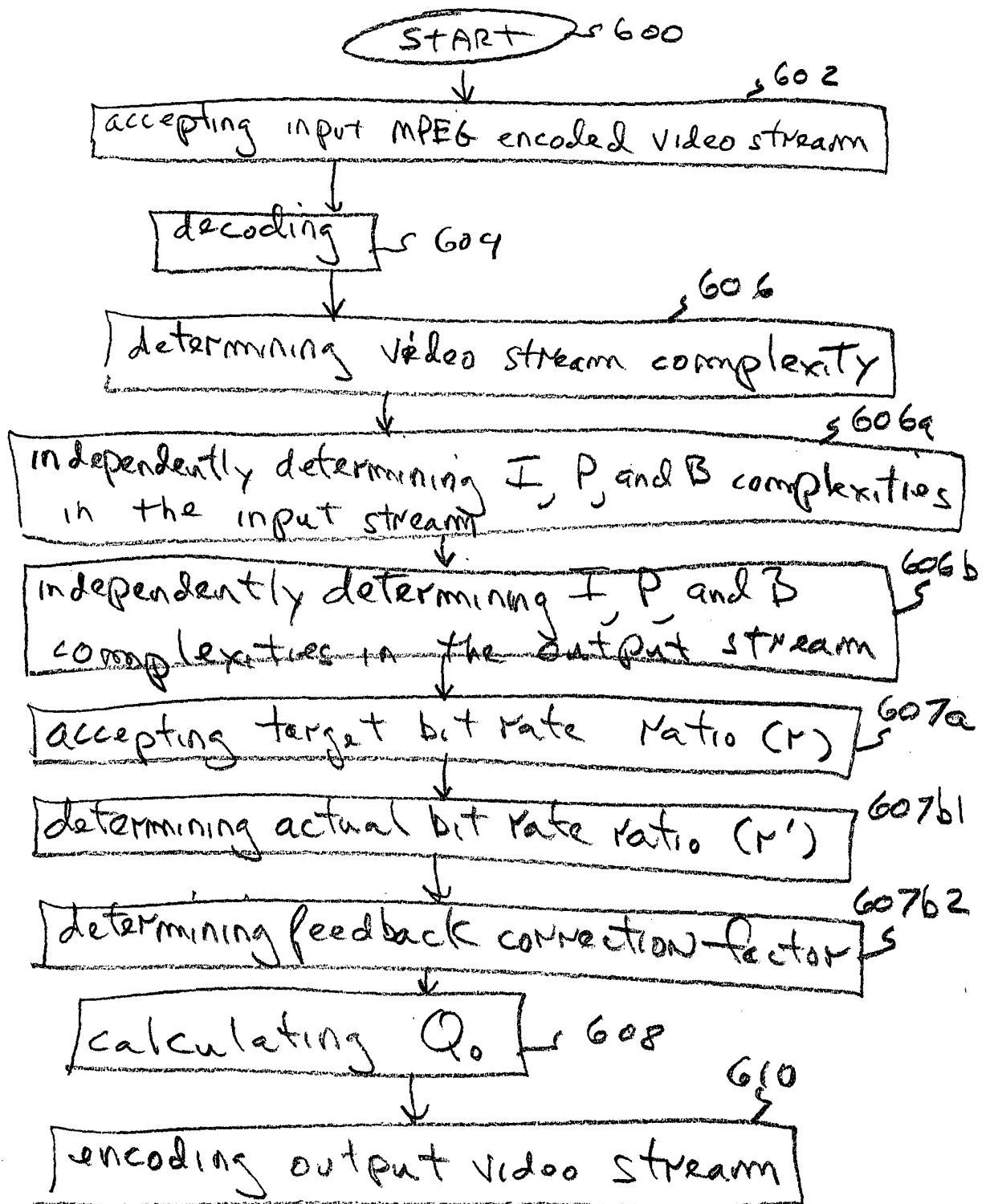|	
Step 1.	Get the picture type and $N_{i,k}$, $Q_{i,k}$, from parsed MPEG-2 stream.
Step 2.	If this is the first time for this picture type, set $Q_{o,k}$ equal to $Q'_{i,k}/r$ and go to step 7.
Step 3.	Update the accumulated target bits, target complexity, actual bits and actual complexity for this picture type.
Step 4.	Compute the complexity ratio $\alpha_k = \dfrac{\displaystyle\sum_{j=0}^{k-1}(Q_{o,j} \cdot N_{o,j})}{\displaystyle\sum_{j=0}^{k-1}(Q_{i,j} \cdot N_{i,j})}$.
Step 5.	Compute the bitrate adjustment factor $B_k = \dfrac{\displaystyle\sum_{j=0}^{k-1} N_{o,j}}{r \cdot \displaystyle\sum_{j=0}^{k-1} N_{i,j}} = \dfrac{r'_k}{r}$.
Step 6.	Compute $Q_{o,k} = \dfrac{\alpha_k \cdot Q_{i,k}}{r} \cdot B_k$.
Step 7.	Encode this frame using $Q_{o,k}$ as the quantization parameter.
Step 8.	Repeat Step 1 to Step 7 for all the remaining frames.

Fig. 2

Fig 3

Fig. 4

Fig. 5

START ~ 600

accepting input MPEG encoded video stream ~ 602

decoding ~ 604

determining video stream complexity ~ 606

independently determining I, P, and B complexities in the input stream ~ 606a

independently determining I, P and B complexities in the output stream ~ 606b

accepting target bit rate ratio (r) ~ 607a

determining actual bit rate ratio (r') ~ 607b1

determining feedback correction factor ~ 607b2

calculating Q_0 ~ 608

encoding output video stream ~ 610

Fig. 6

START ⟵ 700

accepting input MPEG-2 encoded video stream ⟵ 702

decoding ⟵ 704

determining video stream complexity ratio ⟵ 706

calculating Q_0 in response to complexity ratio ⟵ 708

encoding output stream into MPEG-4 ⟵ 710

Fig. 7